

ABSTRACT OF THE DISCLOSURE

There is provided a degradation determining system for an exhaust gas sensor, which, even when unexpected changes occur in the air-fuel ratio during execution of air-fuel ratio control, can determine degradation of the sensor by suppressing adverse influence of noise caused by the changes on the output from the sensor, to thereby enhance the accuracy of the degradation determination. In the degradation determining system, a determining input signal IDSIN for determining the degradation of the sensor is generated, and a modulation output (  $u(k)$ ,  $DSMSGNS(k)$ ,  $u_s(k)$ , or  $u_d(k)$  ) is generated by modulating the determining input signal IDSIN by using any one of the  $\Delta \Sigma$  modulation algorithm, the  $\Sigma \Delta$  modulation algorithm, and the  $\Delta$  modulation algorithm. Degradation of the sensor is determined based on the output KACT delivered from the sensor when the fuel injection amount is controlled based on the generated modulation output.